



REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES FOR AQUEOUS SAMPLES

FACT SHEET

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Parameter	Container ¹	Preservation ^{2,3}	Maximum Holding Time ⁴
<u>Bacterial Tests:</u>			
Coliform, fecal and total	P,G	Cool 4°C, 0.008%Na ₂ S ₂ O ₃	24 hours
Fecal streptococci	P,G	Cool 4°C, 0.008%Na ₂ S ₂ O ₃	24 hours
<u>Inorganic Tests:</u>			
Acidity	P,G	Cool, 4°C	14 days
Alkalinity	P,G	Cool, 4°C	14 days
Biochemical oxygen demand	P,G	Cool, 4°C	48 hours
Biochemical oxygen demand, carbonaceous	P,G	Cool, 4°C	48 hours
Chemical oxygen demand	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Chloride	P,G	None required	28 days
Chloride, total residual	P,G	None required	Analyze immediately
Cyanide, total and amenable to chlorination	P,G	Cool, 4°C, NaOH to pH>12	14 days
Fluoride	P,G	None required	28 days
Nitrogen			
Ammonia	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Kjeldahl and organic nitrogen	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Nitrate	P,G	Cool, 4°C	48 hours
Nitrate-nitrite	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Nitrite	P,G	Cool, 4°C	48 hours
Oxygen, dissolved probe	G Bottle/Top	None required	Analyze immediately
Phosphorus			
Orthophosphate	P,G	Filter immediately, Cool, 4°C	48 hours
Phosphorus, elemental	G	Cool, 4°C	48 hours
Phosphorus, total	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Sulfate	P,G	Cool, 4°C	28 days
Sulfide	P,G	Cool, 4°C, add zinc acetate plus sodium hydroxide to pH>9	7 days
Sulfite	P,G	None required	Analyze immediately
<u>Organic Tests:</u>⁵			
Volatile Organics (EPA Method 624)	G, TS	Cool, 4°C, HCl to pH<2	14 days
Semi-Volatile Organics plus PCB/Pesticides (EPA Method 625)	G, T	Cool, 4°C	7 days until extraction 40 days after
Oil and Grease	G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Organic Carbon	P,G	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days
Phenols	G only	Cool, 4°C, H ₂ SO ₄ to pH<2	28 days

Parameter	Container ¹	Preservation ^{2,3}	Maximum Holding Time ⁴
<u>Pesticide Tests:</u>			
Pesticides ⁶	G, T	Cool, 4°C, pH 5-9 ⁷	7 days until extraction, 40 days after
<u>Metals:</u> ⁸			
Chromium VI	P,G	Cool, 4°C	24 hours
Mercury	P,G	HNO ₃ to pH<2	28 days
Metals, except Chromium VI and Mercury	P,G	HNO ₃ to pH<2	6 months
<u>Physical Tests:</u>			
Hardness	P	HNO ₃ to pH<2 or H ₂ SO ₄ to pH<2	6 months
Hydrogen ion (pH)	P,G	None required	Analyze immediately
Solids, total	P,G	Cool, 4°C	7 days
Solids, filterable	P,G	Cool, 4°C	7 days
Solids, nonfilterable (TSS)	P,G	Cool, 4°C	7 days
Solids, settleable	P,G	Cool, 4°C	48 hours
Solids, volatile	P,G	Cool, 4°C	7 days
Specific conductance	P,G	Cool, 4°C	28 days
Surfactants	P,G	Cool, 4°C	48 hours
Temperature	P,G	None required	Analyze immediately
Turbidity	P,G	Cool, 4°C	48 hours

1 Polyethylene (P), or Glass (G) containers / Teflon-lined cap (T), or Teflon-lined septum (TS).

2 Sample preservation should be performed immediately upon sample collection. For composite chemical samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4°C until compositing and sample splitting is completed.

3 When any sample is to be shipped by common carrier or sent through the United States Mail, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For preservation requirements, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO₃) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H₂SO₄) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

4 Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time, and has received a variance from the Regional Administrator under § 136.3(e). Some samples may not be stable for the maximum time period given in the Table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show that this is necessary to maintain sample stability. See § 136.3(e) for details.

5 Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.

6 When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity. When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to 4°C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6-9; samples preserved in this manner may be held for seven days before extraction and for forty days after extraction.

7 The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% Na₂S₂O₃.

8 Samples should be filtered immediately on-site before adding preservative for dissolved metals.